

# ***Exotic invasive animals in terrestrial and freshwater ecosystems***

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## ***What is an (invasive) alien ?***

Scientific definition according to “Convention on Biological Diversity”

- **Alien species**: is a species, subspecies, or lower taxon occurring **outside of its natural range** (past or present) **and dispersal potential** (i.e. outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans).
- **Invasive alien species**: is an alien species which becomes established in **natural or semi-natural ecosystems** or habitat.

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Nutria - *Myocastor coypus*



Country of origin  
Data unavailable



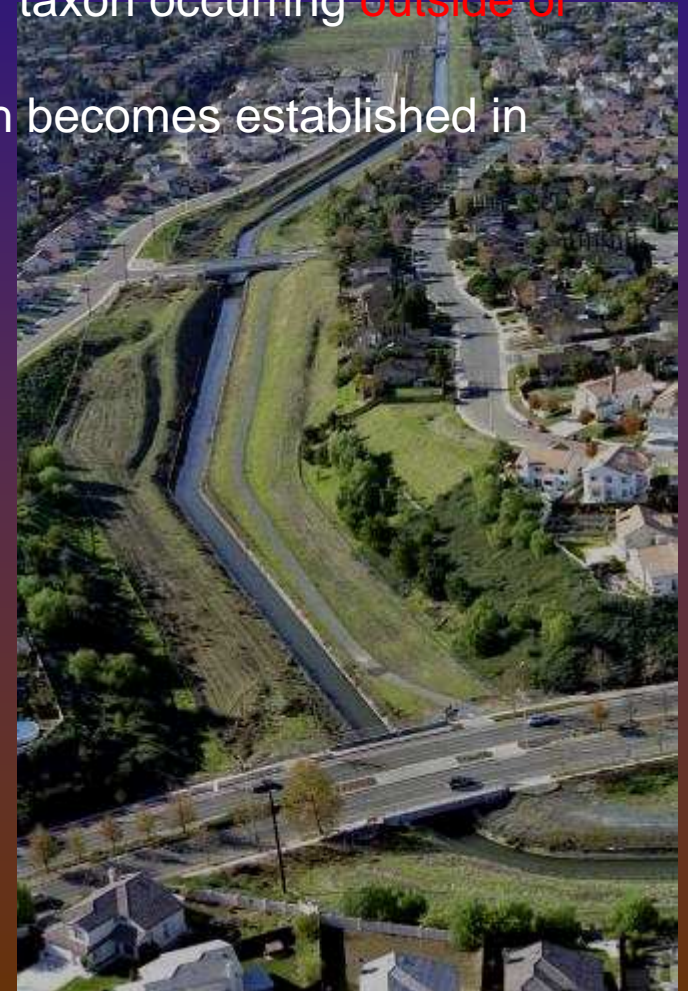
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*Asp - Aspius aspius*



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Eurasian Collared Dove - *Streptopelia decaocto*





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Cornflower -  
*Centaurea cyanus*





# What is an (invasive) alien ?

Definition according to Flemish law

- Decree Flemish Government 21 april 1993. Alien species are **animal species** that do not occur in Flanders, or were **introduced after 1943** (50 years before the decree became active).



# ***Invertebrates***

## Taxa recorded

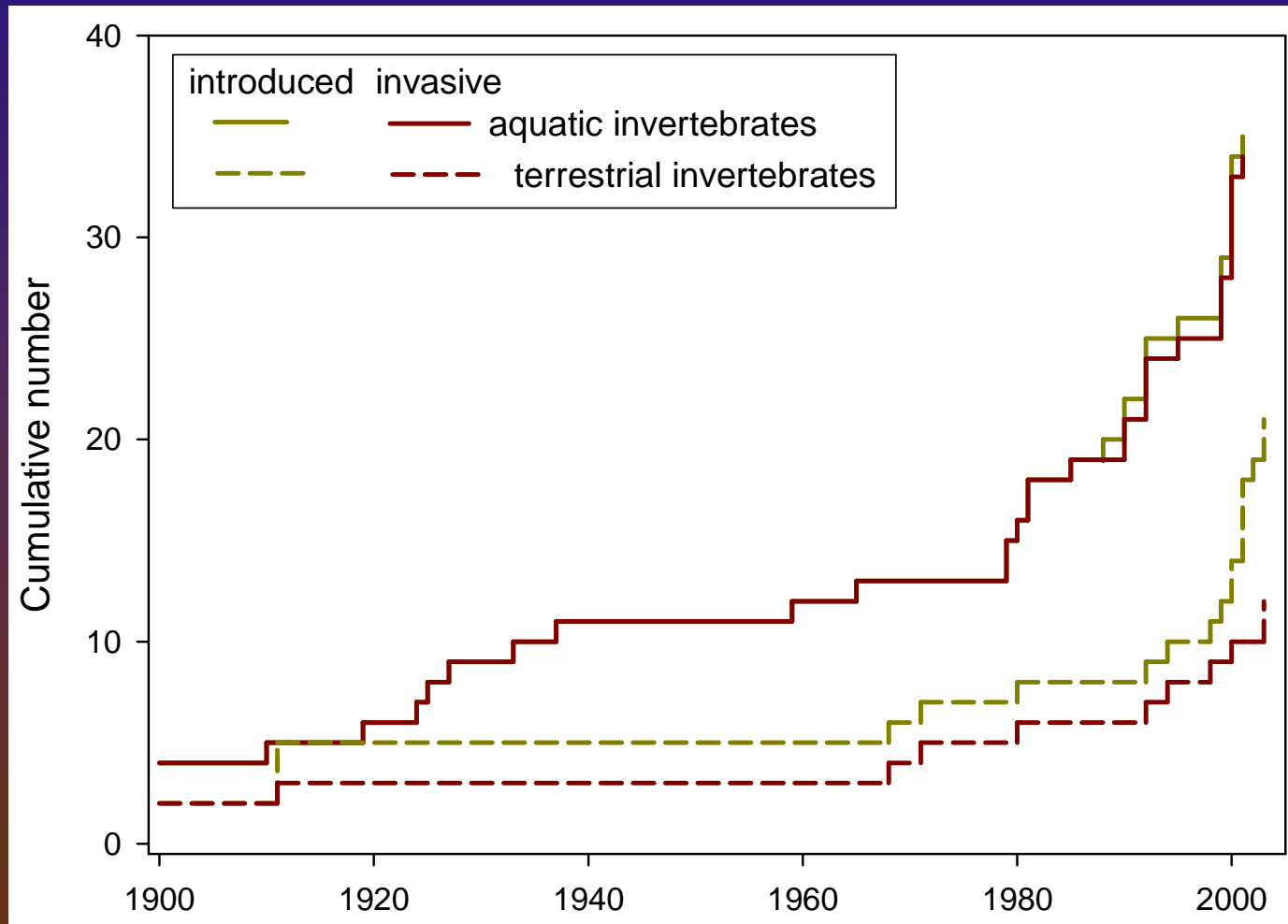
Aquatic organisms		# species	Terrestrial organisms		# species
Crustacea	Amphipoda	6	Chelicerata	Acari	2
	Cladocera	3		Araneae	8
	Conchostraca	1	Insecta	Coleoptera	3
	Decapoda	8		Diptera	2
	Isopoda	1		Heteroptera	1
	Mysidacea	4		Hymenoptera	7
Mollusca	Bivalvia	5	Mollusca	Gastropoda	2
	Gastropoda	3	Total number		25
Plathelminthes	Turbellaria	1			
Annelida	Oligochaeta	2			
	Polychaeta	2			
Total number		36			



# *Invertebrates*

## Historical trends

- Introduced after 1900



- Date unknown for 1 aquatic and 4 terrestrial species

# ***Invertebrates***

## Historical trends

- Disappeared again
  - *Camponotus vagus* (Hymenoptera, Formicidae)
  - *Leptestheria dahalacensis* (Crustacea, Conchostraca)





# Invertebrates

## Historical trends

### Only in buildings

- Hymenoptera, Formicidae
  - *Hypoponera bondroiti*, *Linepithema humile*
- Chelicerata, Aranea
  - *Steatoda paykulliana*, *Artema atlanta*,  
*Euryopsis episinoides*



### Only in urban environment

- Hymenoptera, Formicidae
  - *Monomorium pharaonis*
- Chelicerata, Aranea
  - *Holocnemus pluchei*,  
*Crossopriza lyoni*,  
*Hadrotarsus ornatus*,  
*Micropholcus fauroti*



# ***Invertebrates***

## Origin

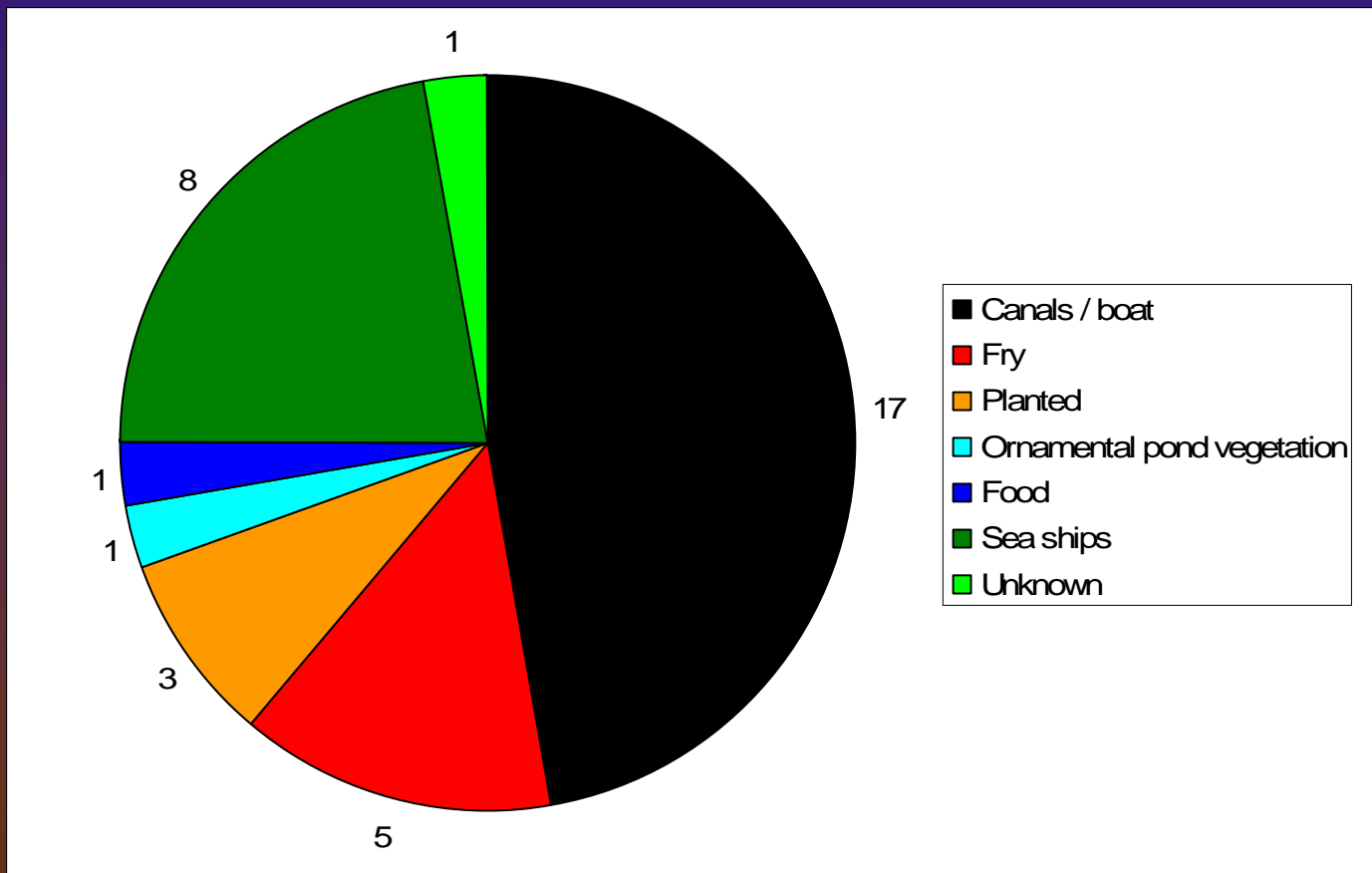
	aquatic	terrestrial
Medditerranean Area	3	5
Ponto-Caspian area	14	
Middle East	1	
Asia	7	8
Africa		1
North-America	11	1
South-America		1
Pantropics		3
Oceania		3



# ***Invertebrates***

Introduction route

Aquatic species



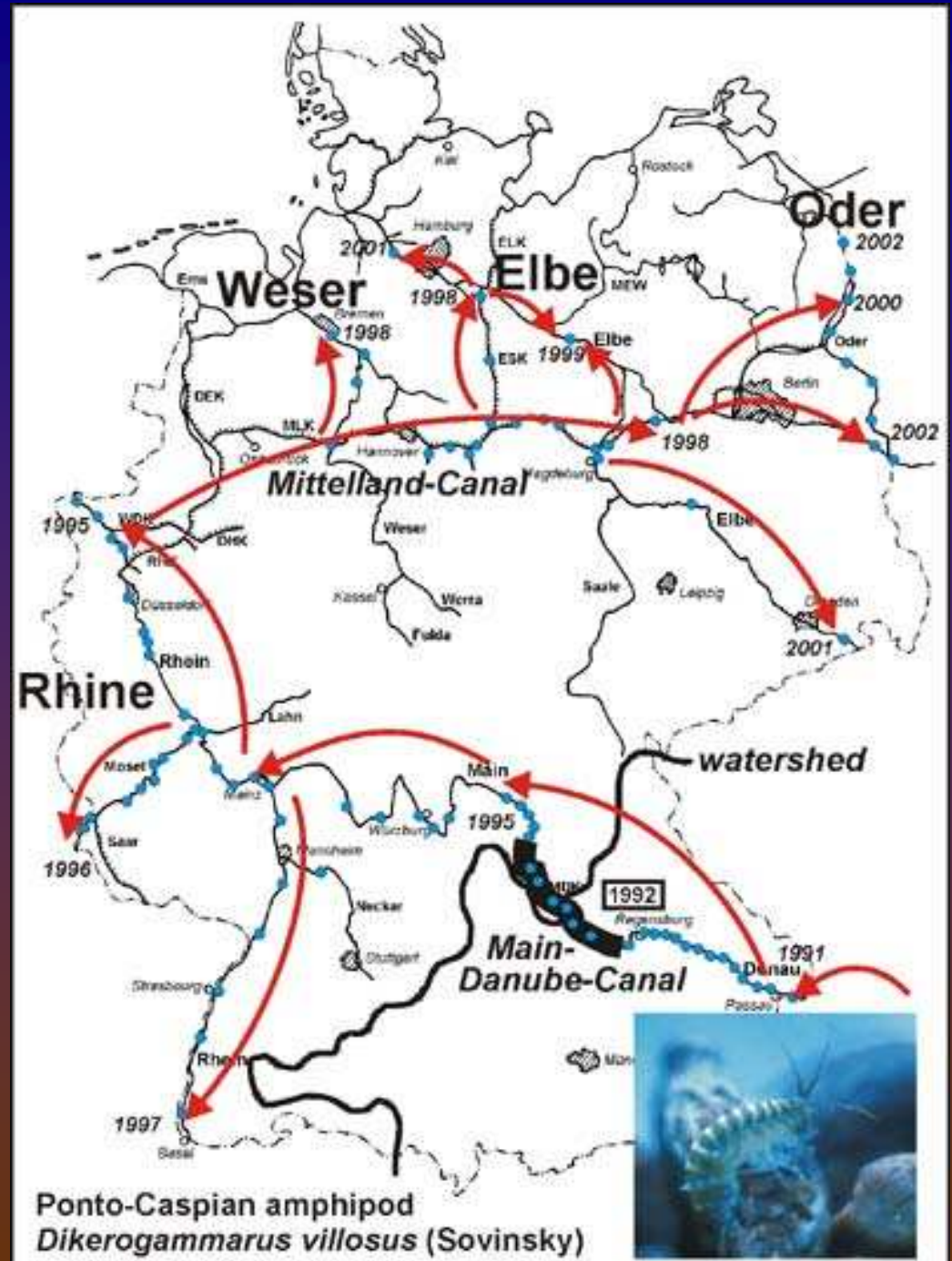
# Invertebrates

Introduction route

Aquatic species



Killer Shrimp  
*Dikerogammarus villosus*





# ***Invertebrates***

Introduction route



Red-gilled Mud Worm  
*Marenzelleria viridis*



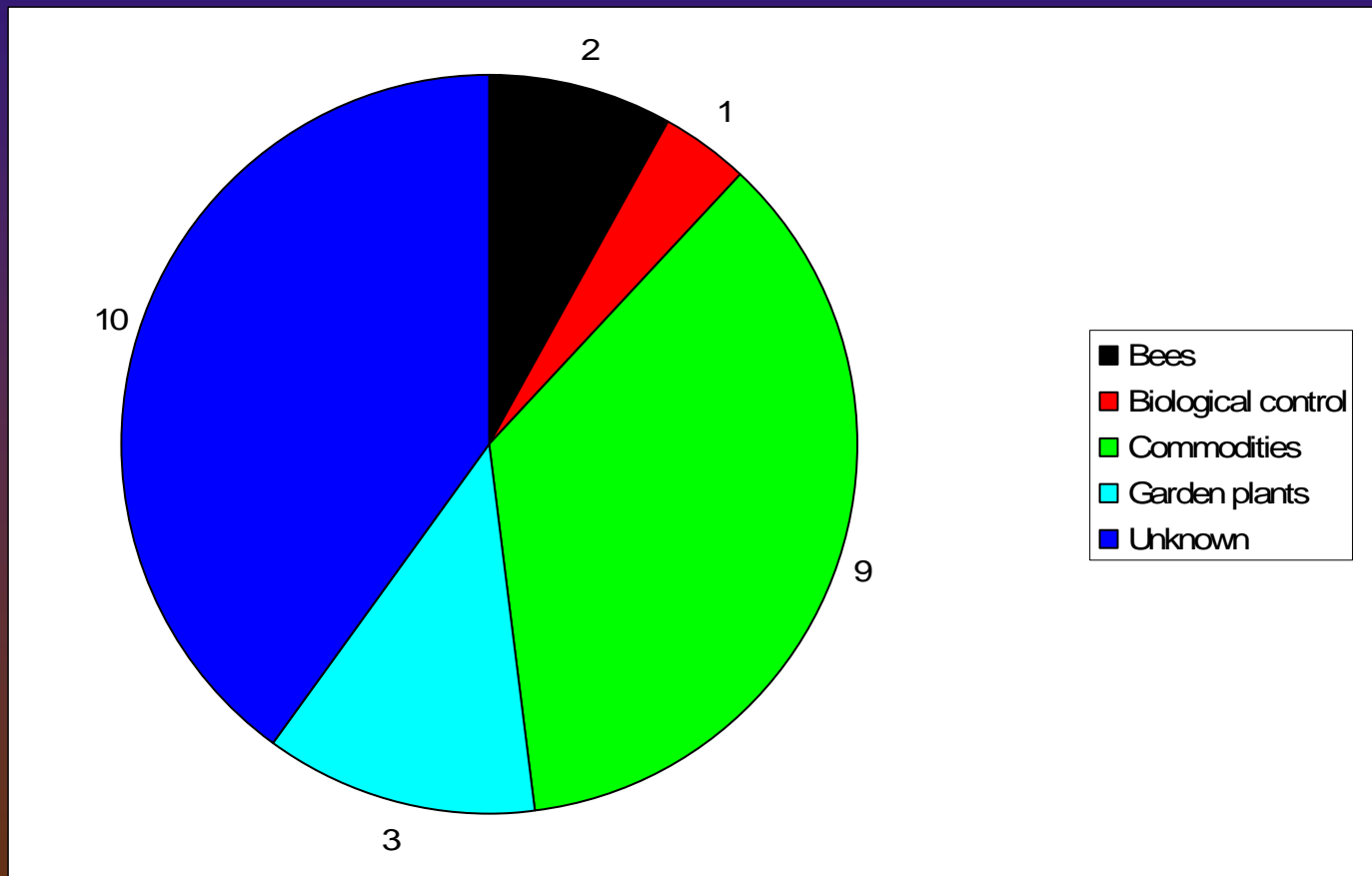
Chinese Mitten Crab  
*Eriocheir sinensis*



# *Invertebrates*

Introduction route

Terrestrial species





# ***Invertebrates***

Introduction route

Terrestrial species



# Vertebrates

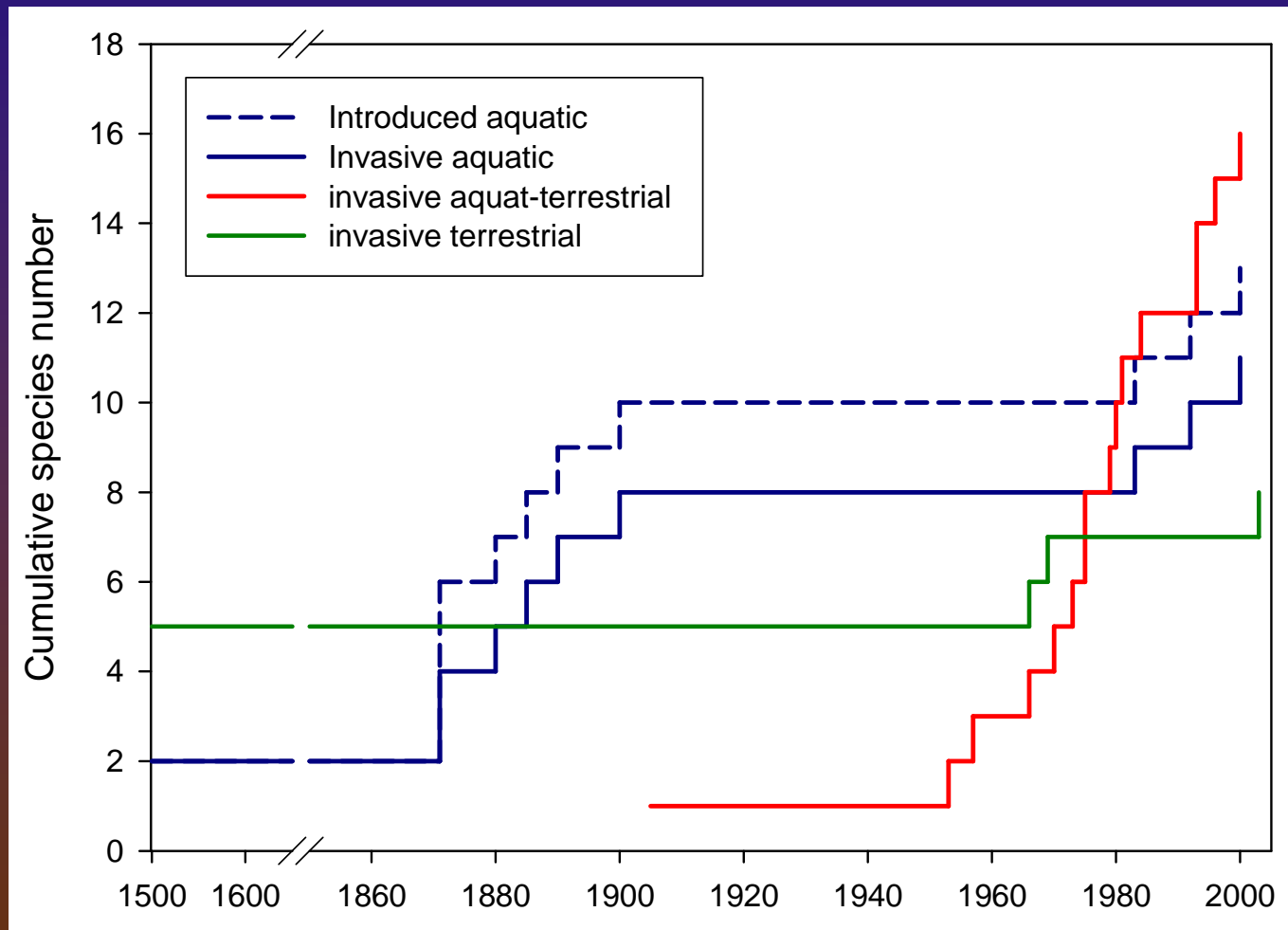
Taxa recorded

	Organisms		
	aquatic	semi-aquat	terrestrial
Pisces	13		
Amphibia		3	
Reptilia		1	
Aves		10	2
Mamalia		2	7
Total	13	16	9

# Vertebrates

## Historical trends

- Introduced after 1500



- Date unknown for 1 terrestrial species



# Vertebrates

## Historical trends

- Disappeared again
  - *Yellow Bullhead - Ameiurus natalis*



- *Channel Catfish*  
*Ictalurus punctatus*



# Vertebrates

## Historical trends

### Pisces

- Grass Carp
- Silver carp
- Rainbow trout
- Brook Trout
- Welsh Catfish
- Baltic vimba

- Ctenopharyngodon idella*
- Hypophthalmichthys molitrix*
- Oncorhynchus mykiss*
- Salvelinus fontinalis*
- Silurus glanis*
- Vimba vimba*



### Amphibia

- Italian Crested Newt
- Marbled Newt
- Paddle Tail Newt

- Triturus carnifex*
- Triturus marmoratus*
- Pachytriton labiatus*



### Mamalia

- American Mink
- Raccoon Dog

- Mustela vison*
- Nyctereutes procyonoides*





# Vertebrates

Historical trends

Old introductions

Norway Rat  
*Rattus norvegicus*



Ship Rat  
*Rattus rattus*



Rabbit  
*Oryctolagus cuniculus*



Pheasant  
*Phasianus colchicus*





# Vertebrates

Historical trends

Recent introductions

Raccoon - *Procyon lotor*



Bedriaga's Frog - *Rana bedriagae*



Fathead Minnow - *Pimephales promelas*



Asp - *Aspius aspius*

# Vertebrates

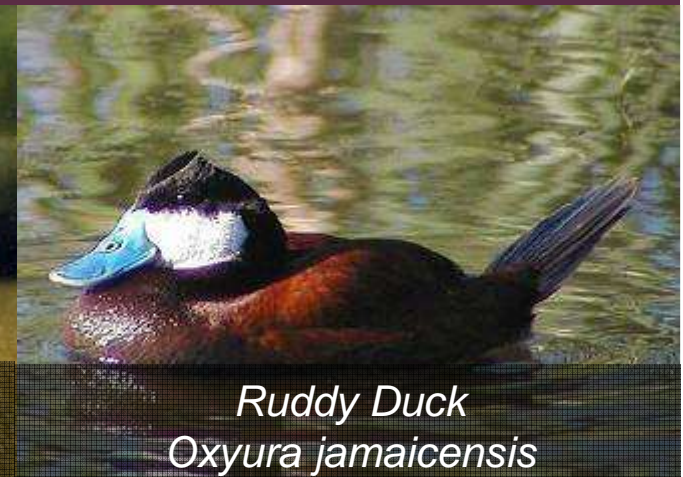
## Origin

	Organisms		
	aquatic	semi-aquatic	terrestrial
Ponto-Caspian	3		
Asia	3	2	4
North-America	7	6	1
Africa		1	1
Australia		1	
Middle East		1	1
Medditerranean		2	1
South-America		2	

# Vertebrates

## Introduction route

	Organisms		
	aquatic	semi-aquat	terrestrial
Canal / boats	2		
Fishing / hunting	11	1	2
Fur		2	
Garden pond		13	
Pets / gardens			4
Sea ships			3

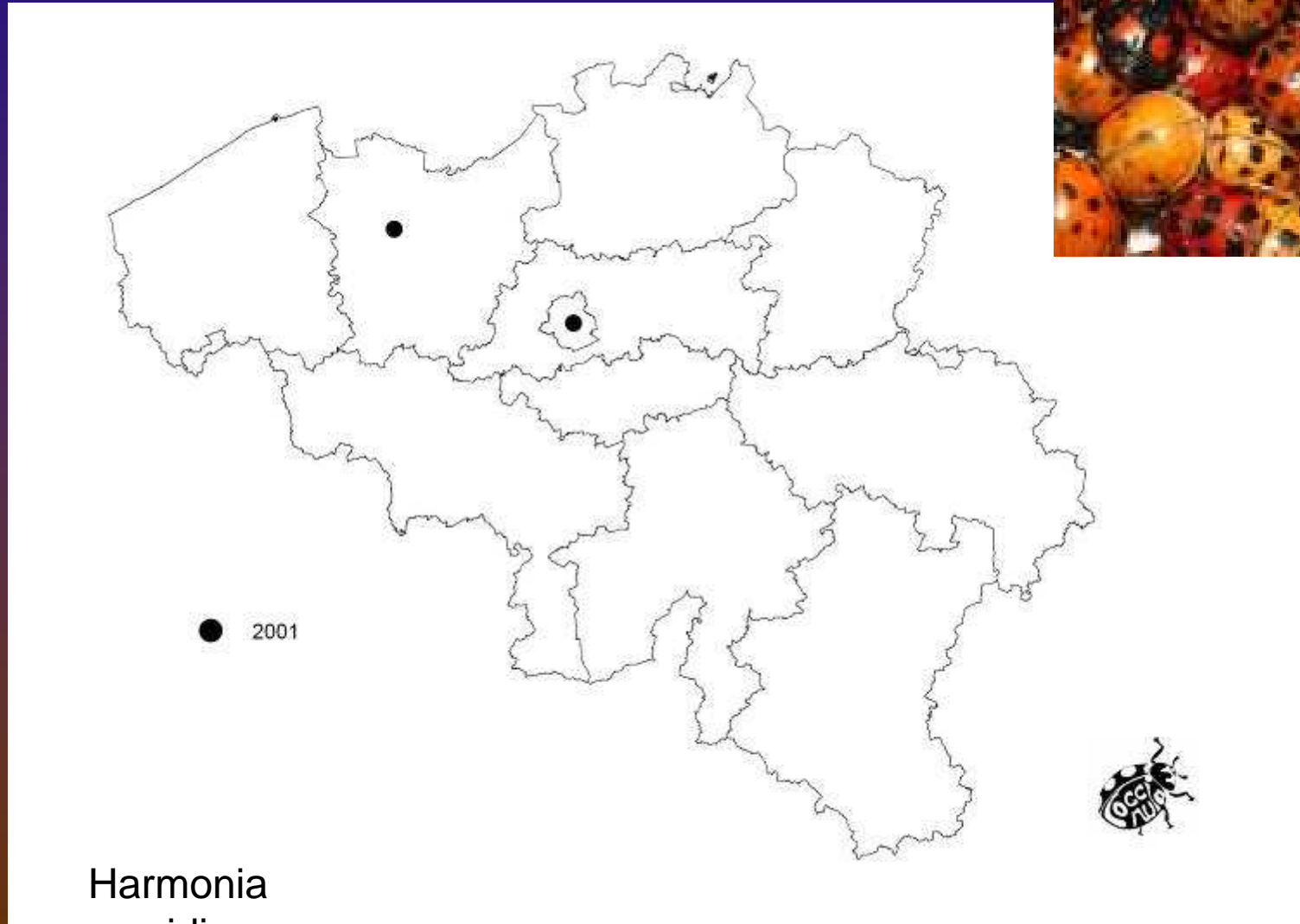






# Population increase

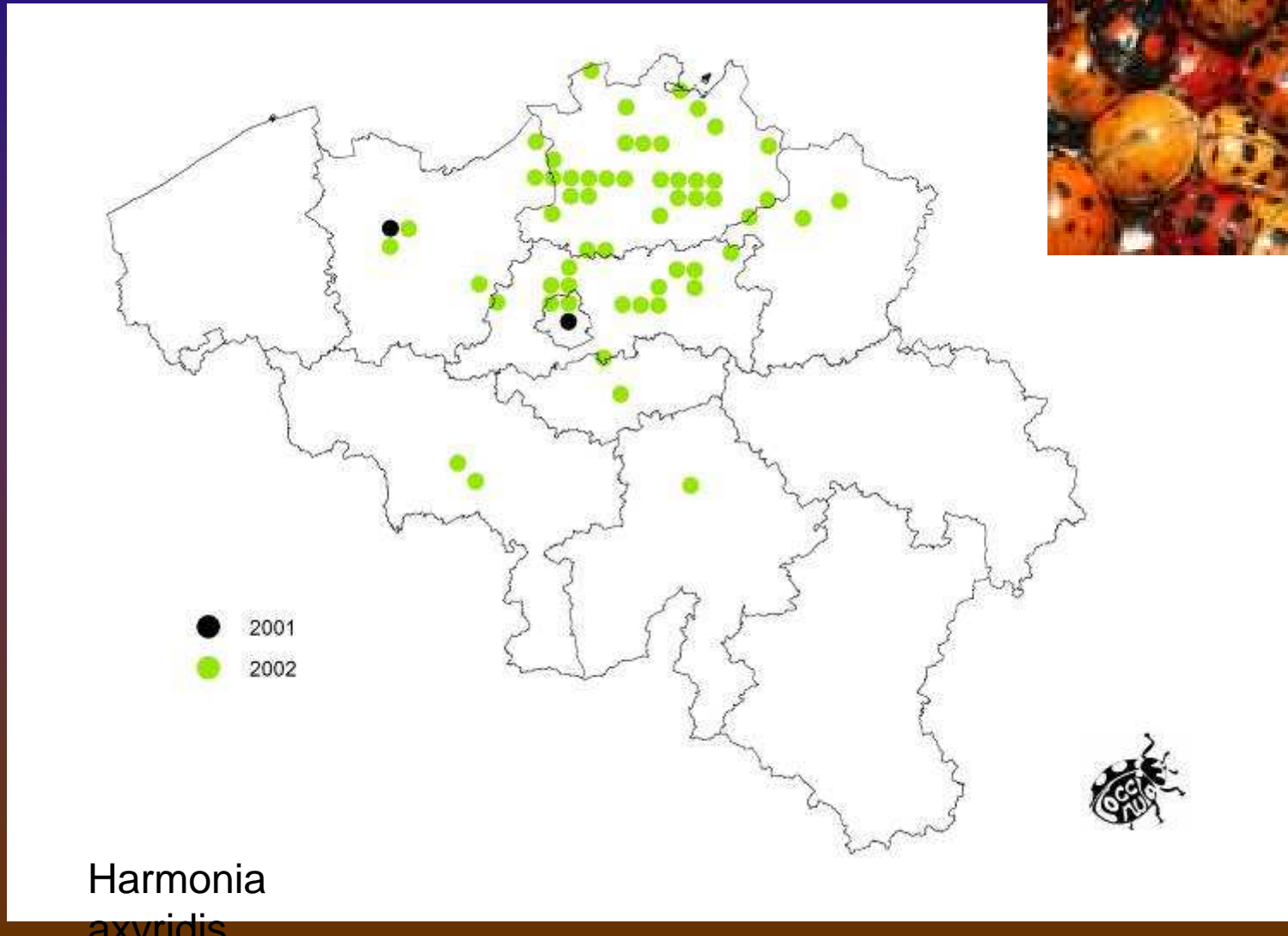
- Multicolored Asian Lady Beetle



Harmonia  
axyridis

# Population increase

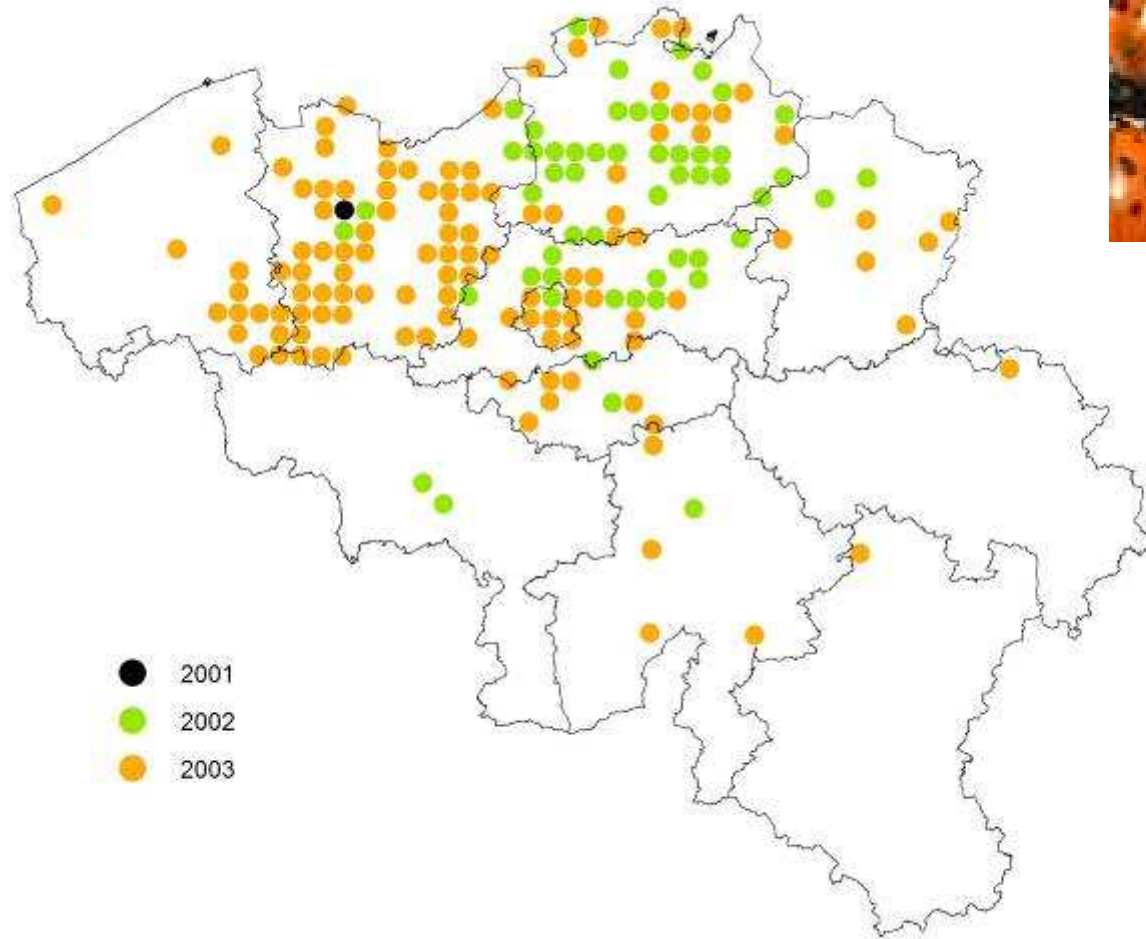
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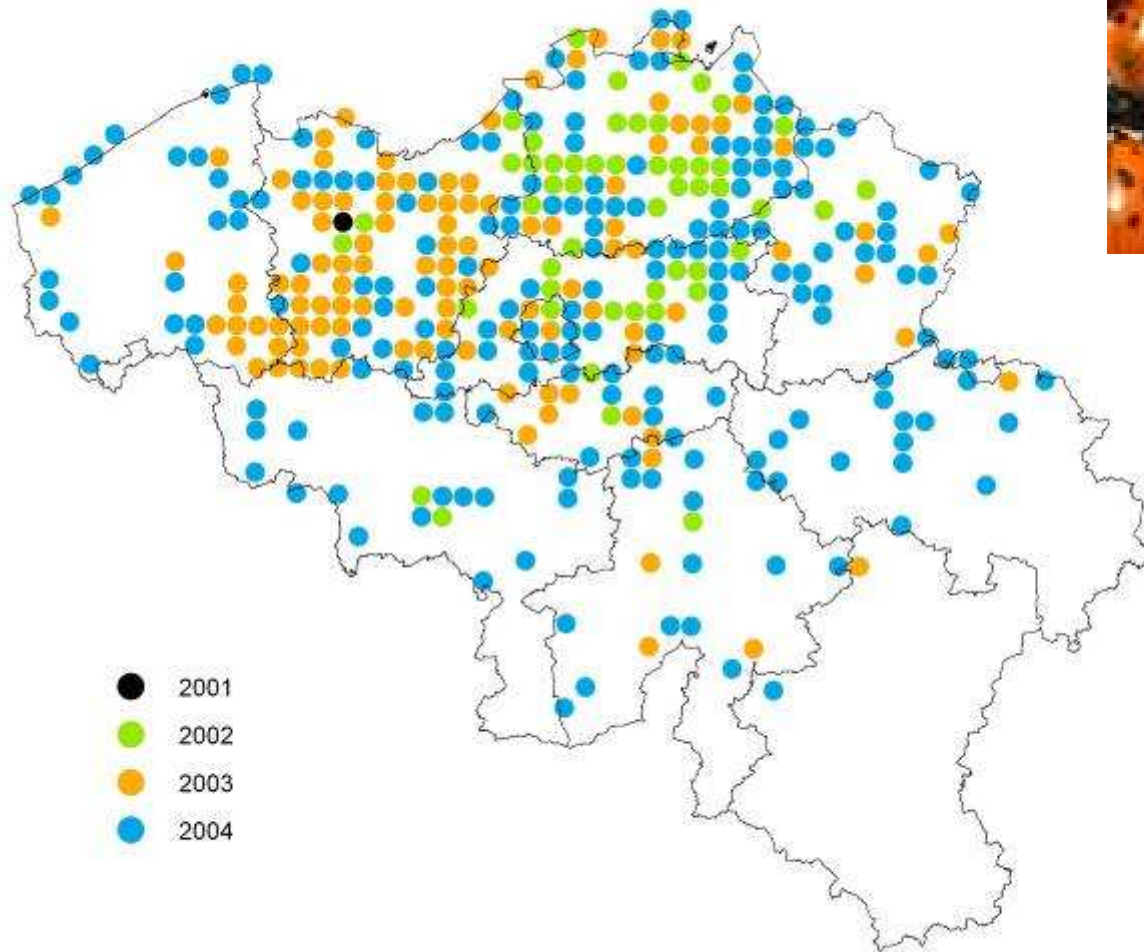
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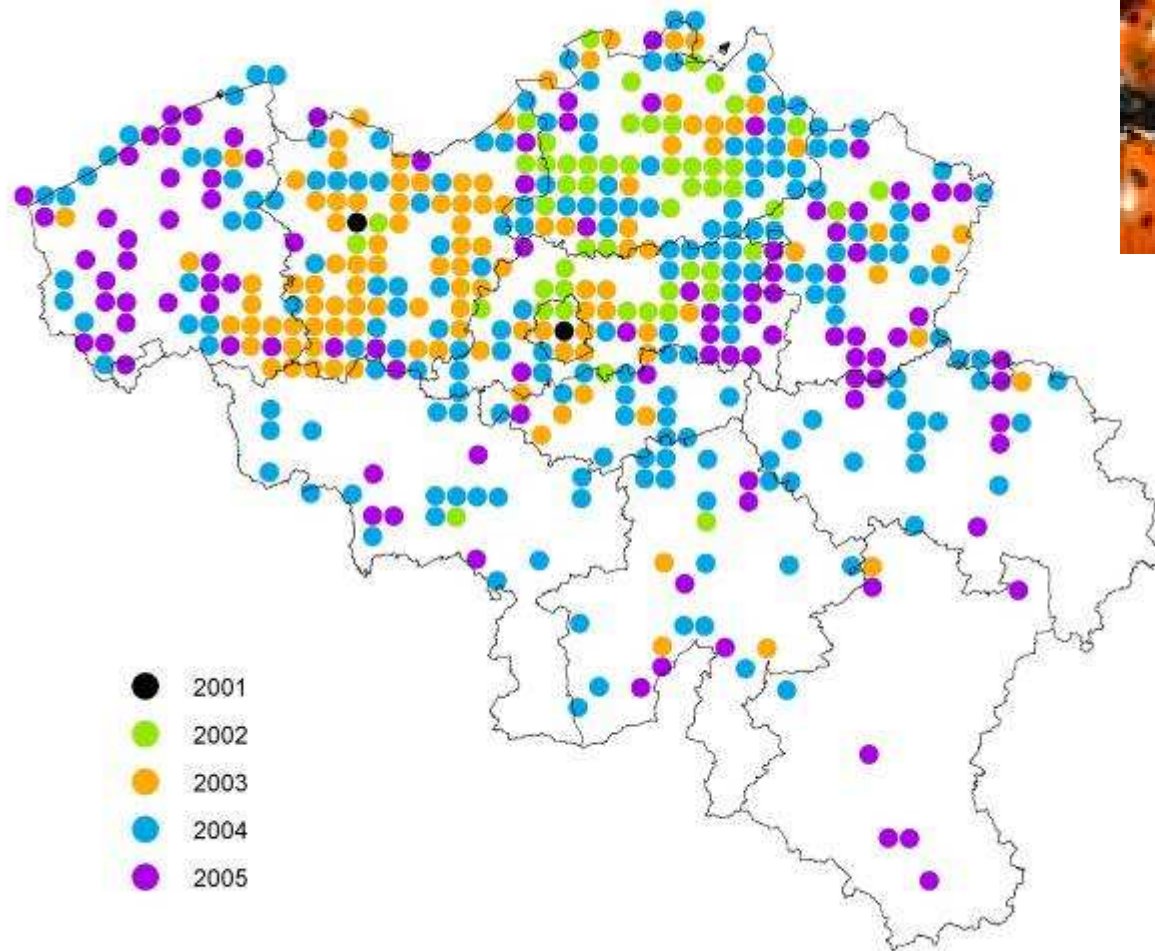
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# Population increase

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